AREAS OF HIGH AND LOW PRESSURE.

During the month of August there were six high areas and nine low areas sufficiently well defined to be traced on Charts I and II. During this month the center of high and low is very difficult to determine, and very often the point fixed is only approximate.

The accompanying table exhibits the principal points regarding the origin, velocity, and disappearance of these highs and lows, and the following description is added:

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	1, p.m.	48	130	12, p.m.	46	58	3,840	11.0	349	14.5
II	8, a.m.	36	123	18, a.m.	44	62	4,260	10.0	426	17.7
III	20, a.m.	52	108	23, p.m.	43	80	2,040	3.5	583	24.3
IV	23, p.m.	44	101	28, a.m.	48	59	2,520	4.5	560	23.3
V	26, a.m.	46	112	28, a.m.	48	76	1,740	2.0	870	36.2
VI	29, a.m.	45	129	†2, p.m.	45	60	3,240	4.5	720	30.0
Total							17,640	35.5	3,508	146.0
Mean of 6 paths							2,940		585	24.3
Mean of 35.5 days									497	20.7
Low areas.										
I	*28, p.m.	43	116	3, a.m.	49	67	2,730	5.5	496	20.7
II	1, a.m.	40	115	5, p.m.	36	94	2,130	4.5	473	19.7
III	4, a.m.	40	94	6, p m.	36	76	1,110	2.5	444	18.5
IV	4, p.m.	51	117	10, a.m.	44	85	2,130	5.5	387	16.1
V	8, p.m.	52	114	14, a.m.	50	61	2,580	5.5	469	19.5
VI	12, a.m.	26	78	20, p.m.	41	69	1,380	8.5	162	6.8
VII	13, a.m.	44	116	23, a.m.	43	70	3,480	10.0	348	14.5
VIII	20, a.m.	43	118	23. a.m.	53	104	1,260	3.0	420	17.5
IX	24, a.m.	53	117	26, a.m.	51	99	810	2.0	405	16.9
Total							17,610	47.0	3,604	150.2
Mean of 9 paths							1,957		400	16.7
Mean of 47.0 days									375	15.6

*July. †September.

Highs.—Three of the highs, Nos. I, II, and VI, were traced from the North Pacific, nearly due east, to the North Atlantic. No. III was first noted to the north of Montana and disappeared over Lake Erie. No. IV began in South Dakota and disappeared over the Gulf of St. Lawrence. No. V began in extreme southwest Montana and was last noted in Ontario.

Lows.—Four of the storms, Nos. I, II, VII, and VIII, began in the middle Plateau region. Three more, Nos. IV, V, and IX, began to the north of Montana. No. III was first noted in north Missouri. No. VI was a West India hurricane, and was first noted off the southeast point of Florida on the 12th. Its motion, north or a little east of north, was extremely slow; it was last noted off Cape Cod on the evening of the 20th, having moved only 6.8 miles an hour. The motion of these storms, except the hurricane, was generally eastward. No. II was last seen in Arkansas; No. VIII, in Assinaboia; No. IX, in Manitoba; No. IV, in lower Michigan; No. III, off the middle Atlantic coast; No. VII, off the coast of Maine; and Nos. I and V, in the Gulf of St. Lawrence. During the progress of these lows the following maximum winds were reported on the coasts and lakes: On the evening of August 5, as No. III approached the middle Atlantic coast, New York City experienced a northwest wind of 64 miles an hour; the morning of the 6th Cape Henry reported a west wind of 56 miles; on the evening of the 11th, as storm No. V approached the upper Lakes, Chicago had a northeast wind of 52 miles. In connection with the very slow-moving hurricane, the following velocities were reported: Jupiter, a. m. of the 13th, north 52 miles, evening of the same day the same station reported 51 miles; a. m. of 15th Charleston had a northeast wind of 52 miles; evening of 16th Kittyhawk and Cape Henry had northeast 52 miles; morning of 17th Hatteras reported 74 miles, and on the evening of 17th it reported 105 miles, with an estimated extreme maximum velocity of 140 miles. At the 8 p.m. observation of 17th Hatteras reported a barometer reading of 28.62 inches, the lowest ever experienced on the middle Atlantic coast.—*H. A. Hazen, Professor.*

THE WEST INDIAN HURRICANE OF AUGUST 7-17, 1899.

While there is evidence that this hurricane had its origin far to the eastward of the West Indies its approach toward the region covered by reporting stations of the United States Weather Bureau was not indicated until the morning of August 7. At 8 a. m., seventy-fifth meridian time, of that date the hurricane center was east-northeast and distant about 150 miles from the Island of Dominica. At Roseau, Dominica, the barometer read 29.72 inches, with rain and wind from the northwest blowing at a rate of 12 miles an hour. Up to this time the maximum wind velocity at Roseau had been 18 miles an hour from the northeast. Immediately upon the receipt of the 8 a. m. telegraphic reports the Central Office of the Weather Bureau at Washington ordered hurricane signals at Roseau, Dominica, Basseterre, St. Kitts, and San Juan, Porto Rico, and sent advisory messages to all other stations in the Lesser Antilles and also to Santo Domingo, Kingston, Jamaica, and Santiago, Cuba, with information regarding the position and probable course of the hurricane. This information was also telegraphed to important seaports on the Atlantic and Gulf coasts, and furnished the Bureau of Navigation, Navy Department, the Maritime Associations, and the Press. On the afternoon of the 7th hurricane signals were ordered at Santo Domingo.

During the next twenty-four hours the hurricane traveled in a west-northwest direction at a speed of about 16½ miles an hour, crossing directly over the Island of Guadeloupe early in the afternoon, and passing 50 to 75 miles south of St. Kitts late in the afternoon of the 7th, and reached the southeast coast of Porto Rico shortly after 8 a. m. on the morning of August 8. At St. Kitts the lowest barometer, 29.268 inches, was reached at 5 p. m., and the maximum wind velocity was 72 miles an hour from 4:22 to 4:27 p. m., with an extreme velocity for one minute of 120 miles at 4:40 p. m. Along this portion of the track the destruction of life and property was most marked on the islands of Guadeloupe, Montserrat, and St. Croix, which lay along the path covered by the storm's vortex.

Tuesday, August 8, 1899, will go on record as a day during which Porto Rico experienced one of the most disastrous hurricanes noted in the history of the West Indies. In the morning the hurricane center struck the southeastern part of the island and moved west-northwest, passing very near and apparently to the northward of Ponce. The lowest barometer reading noted at the Weather Bureau station at San Juan was 29.23 inches at 8.30 a. m. Reports of readings of aneroid barometers in the possession of voluntary observers who were located nearer the path of the storm's center show a barometric gradient which will account for the terrific violence of the hurricane. At Guayama a reading of 27.75 corrected for elevation and instrumental error, was registered, and at Juana Diaz a reading of 28.11 inches was recorded at 9:30 a. m.

During the 8th the storm center continued a west-northwest course and reached the northeast coast of Santo Domingo the morning of the 9th. Hurricane signals were ordered at Santiago, Cuba, and all Cuban stations were notified of the position and course of the storm, and vessels in Cuban ports bound north and east were advised to remain in port. In